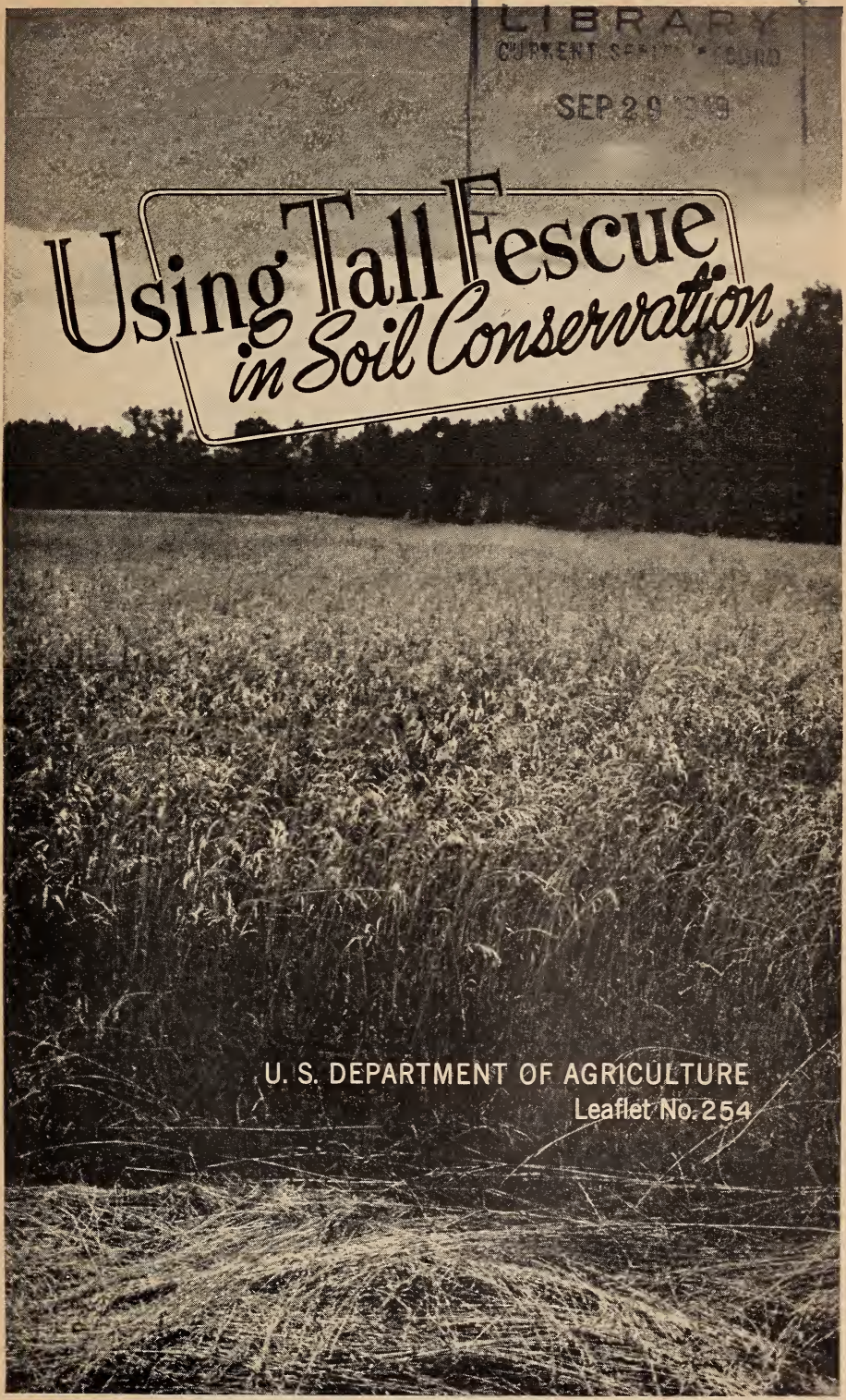

Using Tall Fescue in Soil Conservation

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USING TALL FESCUE IN SOIL CONSERVATION

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Tall fescue has many characteristics that make it a promising grass for conservation farm planning in the South. It will grow better on wet-land pastures than other grasses in common use. It will also grow well on droughty slopes. It is a cool-season grass that does well with legumes in soil-conserving crop rotations. Since it makes good pasture (fig. 1) and stays green in winter, it cuts down on the acreage needed for feed crops. And it has the deepest and strongest root system of any grass now grown in the South. This root system holds up cattle on wet land where they would otherwise mire; it makes an excellent turf in waterways; and it controls erosion on steep slopes.

The experience of the authors has been largely with Kentucky 31 tall fescue, which is also called Suiter's grass. Observational results to date, however, show no difference in growth and seed characteristics between Kentucky 31, Alta, or some other tall fescues.

Kentucky 31 tall fescue is a good pasture grass for class V wet land. This land is nearly level and not subject to erosion. But it is not fit for cultivation because it is too wet and for one reason or another it cannot be economically drained. Planted to tall fescue along with a suitable legume it makes excellent pasture. Good use of all the land is an important feature of conservation farm plans. Good pasture on wet class V land can contribute much to the farm income.

Since tall fescue does well on wet land, it is an excellent grass for waterways. Many of these sites are too wet for the common pasture grasses. Tall fescue is especially good for outlets into which water from terraced fields is emptied. These require a grass cover which stands up under heavy flow of water. Fescue will develop a cover on these sites in one season (fig. 2, *B*). After the second year, because of its root system, it offers more resistance to flowing water than any other grass known in the South except Bermuda grass. If a legume is planted with it, fescue in these waterways will furnish winter pasture for livestock.

Tall fescue is a good grass to seed in wet spots in both pasture and cropland. Many wet spots in cultivated fields are too small to be fenced out for pasture. Others are not conveniently located. Fescue and a legume seeded on these areas furnish winter grazing for livestock while they glean the cropland after harvest.

Tall fescue stays green enough during the winter to be eaten readily by livestock. Tips of the leaves turn brown after severe freezes, but enough green material is left to make the grass palatable. Most winter growth, however, is made during warm spells when temperatures reach 65 degrees or more. Thus tall fescue that is to be used for both

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FIGURE 1.—Hereford cattle on a mixture of fescue and Ladino clover on the farm of the Lilly brothers, Hopkinsville, Ky.

summer and winter pasture should be rested in the fall. Tall fescue that is kept closely grazed until cold weather begins will furnish little winter feed.

Not only will this fescue grow on wet land not suited to cultivation or to other pasture grasses, it can also be grazed when other pastures are too wet. A deep, dense root system develops after the first year. This root system furnishes a footing that supports cattle at times when they sink in other pastures.

Its strong root system also makes this fescue an ideal grass for holding soil on steep eroded class VI land and for pastures on class IV land. Such class VI land is too steep or severely eroded for cultivation, but it can be used for pasture. Class IV uplands can be cultivated in long rotations with special attention to erosion control if there is not enough better cropland on the farm. Often, however, they are more productive used as pasture. On most droughty uplands, however, this grass turns rather brown in dry hot weather. Thus in making a conservation farm plan, other pasture must be provided for summer use.

Second-year stands on uplands usually show greater drought resistance, as well as more vigorous growth, than first-year seedings of this grass. This is probably due to further development of its dense root system, which also increases its ability to control erosion.

Stands on low moist land stay green during the hot part of the summer. So far, stands on deep, loose sand have not proved satisfactory. Thus soil and moisture are factors that need to be considered in planning how and where to use this grass.

In mixtures with legumes this fescue grows more vigorously and needs less nitrogen fertilizer than in pure stands. Much remains to be learned about the combinations for the different soils, particularly upland soils. Ladino and Louisiana white clover appear to be ideal for most lowlands and highly fertilized uplands. Reseeding crimson clover, wild winter peas, sweetclover, and lespedeza have shown promise in upland mixtures with tall fescue.

Tall fescue and sericea lespedeza seedings have made good stands (fig. 2, *A*). In a few places the two were seeded together in the spring. In others the grass was sown in sericea in the fall. After the sericea was mowed for hay in late summer, a seedbed was prepared by disking and the grass was put an inch or a little less into the ground with disk grain drills. If this perennial mixture of a deep-rooted, drought-resistant, summer legume and a vigorous cool-season grass fulfills its early promise, it will closely approach an all-year pasture.

Tall fescue seems to be almost the ideal grass to grow in mixtures with Ladino clover on soils that will support this combination (fig. 2, *C*). Both are tall-growing, cool-season plants and, properly managed, they make a sod that is well balanced between grass and legume.

Several seedings of Kentucky 31 tall fescue and alfalfa in Kentucky and Tennessee indicate that tall fescue may be adapted in mixtures with alfalfa. Tall fescue with alfalfa controls erosion more effectively than alfalfa alone and also reduces bloating of livestock.

The South has long needed a soil-conserving grass to grow with cool-season legumes in crop rotations. Other parts of the country that have suitable available grasses have better crop rotations. Perennial grasses for use in the South in the long rotations needed for class III and class IV sloping land are especially needed. Tall fescue shows promise of filling this need. While rotations including a tall fescue and legume mixture have not been grown long enough to test the total effect, yields of the row crop in the rotation should be increased. This much is known: Tall fescue left on the land two or more years develops deep, dense roots that supply enormous amounts of organic matter to the soil. Thus the physical condition of the soil is improved and it will absorb more rain water. And the heavy turf of the mixture protects the surface from erosion.

Winter grazing from this cropland will replace much of the barn feeding required for livestock. Beef cattle, in particular, may be wintered almost entirely on pasture. Besides replacing much of the feed now harvested and stored, winter feed grazed in off-crop seasons would permit more cropland to be kept under protective cover, thus materially reducing erosion.

Where To Plant

Tall fescue is now growing under a wide range of soil and climatic conditions. As has been discussed, it is peculiarly well adapted for use in waterways and wet spots, on class V wet land, on steep eroded class IV and class VI land, and in crop rotations for class III and class IV land.

Like all grasses, it does best on rich land. Tall fescue makes poor growth on soils low in nitrogen unless liberal amounts of nitrogen

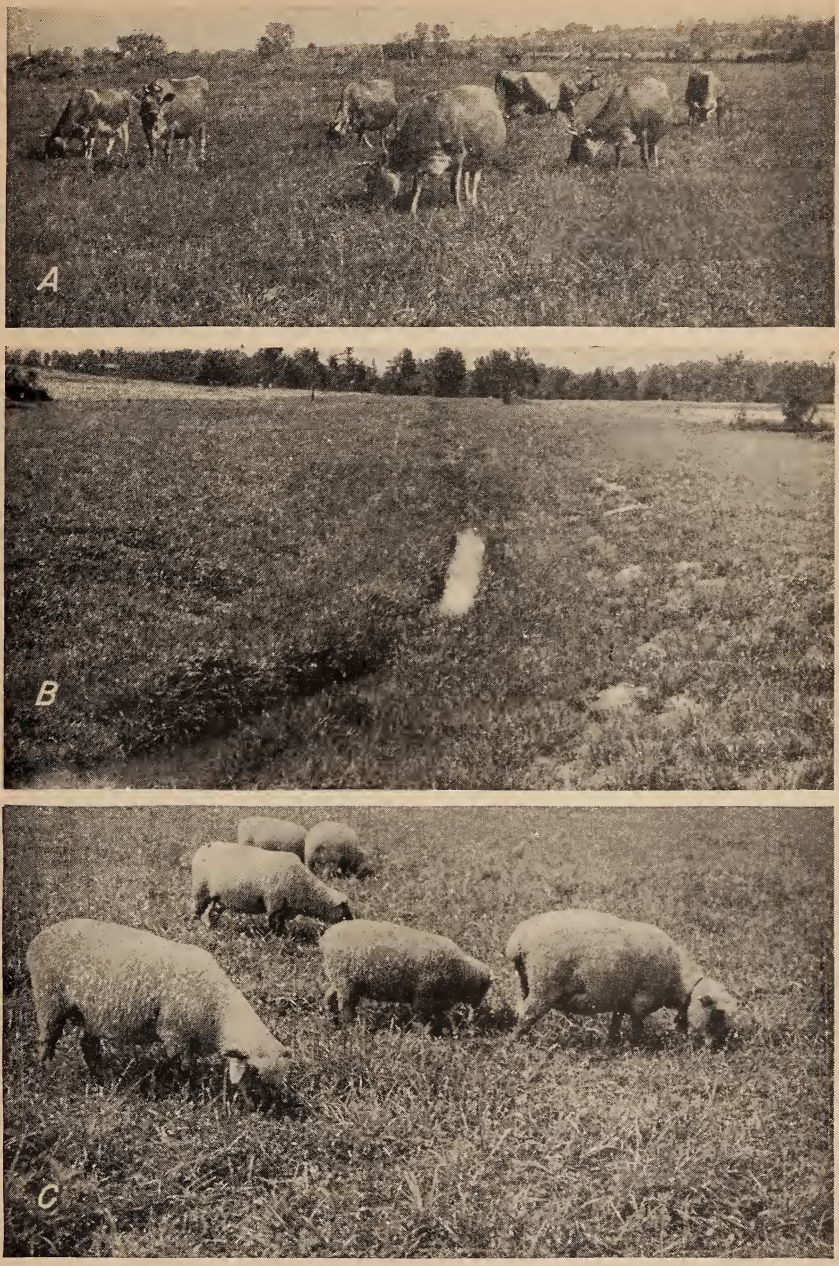

FIGURE 2.—*A*, Dairy cows grazing fescue and sericea lespedeza in September on the Hickory Jersey Farm, Huntsville, Ala. The grass and legume were seeded together the year before in the spring. *B*, Grass was barely showing in October on this wet area in a natural depression. This picture was made the next April. *C*, Sheep on a pasture of fescue and Ladino clover on the farm of Roy C. Hopper, Bowling Green, Ky.

fertilizer are applied. It also does best on neutral soil, but good stands are growing on both lime and acid soils in Alabama.

Much remains to be learned about what it will do in the lower South. In the Coastal Plain, lowlands that support good stands of white clover and uplands that grow crimson clover seem to be the best for tall fescue.

How and When To Plant

Cultural practices for this fescue have not been fully developed. Both fall and spring seedings have been successful. Early September seems the best time to seed it in the middle and upper parts of the South (fig. 3). Good stands have been reported from several places

FIGURE 3.—Spring growth of fescue and Ladino clover seeded the fall before on eroded, terraced upland on the farm of Willburn McDowell, McMinnville, Tenn.

in Kentucky where tall fescue seed was sown between corn rows and covered lightly in August. Near the coast, later seedings seem advisable. About the first of November appears to be the best time to sow tall fescue in the middle and lower Coastal Plain.

Grass and weed competition during the first growing season is more severe on spring than on fall seedings. This competition is particularly severe when a wet spring season is followed by drought in May and later in the summer.

Better stands usually have resulted from drilled than from broadcast seedings. Stands have been improved by shallow covering and cultipacking after seeding on well-prepared soil. Setting the drills to cover the seed not more than an inch deep has given good stands. Farmers who do not have drills get good stands by mixing the seed and fertilizer and sowing with fertilizer distributors set to put down the desired acre rate.

Farmers have got good stands by drilling the seed between crop rows early in the fall. A few have made successful seedings at the last cultivation of corn. At Watkinsville, Ga., good stands resulted from sowing seed and covering it lightly immediately after winter oats were planted. A heavy turf developed during the summer after the oats were harvested.

Where a legume is seeded with tall fescue in the fall, the legume is usually sown immediately after the grass seed is drilled. It is then covered lightly, preferably by a cultipacker. In areas where clover seedlings may freeze in winter, sow the clover seed early the next spring.

In all tall fescue and legume combinations, you should apply lime, phosphate, and potash as needed to keep the soil in condition to support vigorous growth of the legumes. Vigorous legumes supply nitrogen for the grass.

There is some difference of opinion about rates of seeding. Although lighter rates have given good stands under ideal conditions, about 10 pounds per acre with corresponding rates of adapted legumes seems to be about the safest under average conditions.

Seed Production

Much of the Kentucky 31 tall fescue planted so far has been for seed production. The demand for seed has resulted in high prices. The variety was discovered on the mountain farm of W. M. Suiter, near Frenchburg, in Menifee County, Ky. Mr. Suiter had been using it for pasture on steep hillsides since about 1890. In 1931 he gave the Kentucky Agricultural Experiment Station some seed for trial plantings. In 1940 the Soil Conservation Service bought 70 pounds of seed from B. F. Suiter, a son of the discoverer of the grass, and planted it at an SCS nursery.

All told, Soil Conservation Service nurseries harvested a total of 84,445 pounds of seed between 1943 and 1948. The cover picture shows one of the seed-production blocks at the SCS nursery at Chapel Hill, N. C. Seed from these nurseries has been used to plant at least one 5-acre observational and seed-production patch in each of 785 work units in soil conservation districts in 687 counties of the 9 Southeastern States. Seed harvested in 1948 from the increase of the original 70 pounds brought the total acreage planted in the Southeast from this source to more than 100,000 acres.

No special machines are needed to harvest this seed. Several methods of harvesting have been used successfully. Direct combining is the most widely used (fig. 4). When harvesting by direct combining, you must watch carefully so as to get the seed before too much of it shatters and falls to the ground. In other words, you

FIGURE 4.—Fescue being combined for seed on a well-drained upland field.

should harvest while there is enough green seed to require either spreading and stirring or using a seed drier.

Cutting with a grain binder will probably get a higher proportion of seed than any other method. You should cut when the seed is mature enough for a few seeds to be knocked off by rapping a seed head smartly against your hand. Leave it in shock in the field until dry, and then thresh it.

Several farmers in mountainous areas cut the grass with cradles and tie it into bundles by hand. They then shock it and thresh it as they would if a binder were used. This method requires more hand labor than the others. But it lets farmers who need a good erosion-control plant harvest their own seed even though their land is too steep for combines or binders.

Good stands of this grass in the second or third years of growth often produce 400 to 600 pounds of seed per acre. Nitrogen fertilizer is an important factor in seed production. Early spring applications of readily available nitrogen, put on at about the same rates as for small grain, have given substantial increases in seed yields. Too much nitrogen causes the grass plants to lodge and thus lowers yields.

Because of its unusual range in both soil and climatic adaptation and its ability to control erosion, Kentucky 31 tall fescue will have many uses in a well-planned soil and water conservation program. Further field experience will show what its limitations are and how it must be managed under field conditions.

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